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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,136	12/15/2003	Michael H. Eiselt	IVPD-0059	6345
23377 7590 01/18/2008 WOODCOCK WASHBURN LLP CIRA CENTRE, 12TH FLOOR 2929 ARCH STREET PHILADELPHIA, PA 19104-2891			EXAMINER BELLO, AGUSTIN	
			ART UNIT 2613	PAPER NUMBER
			MAIL DATE 01/18/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/737,136

Applicant(s)

EISELT ET AL.

Examiner

Agustin Bello

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16,23-34,49,50 and 52-61 is/are pending in the application.
- 4a) Of the above claim(s) 35-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16,24-34,49,50 and 52-61 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/19/07.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 7-8, 24, 30-31, 49-50, 55, 57, 59, and 60 are rejected under 35 U.S.C. 102(b)
as being anticipated by Maxham (U.S. Patent No. 6,411,407).

Regarding claim 1, 31, 55, 59, and 60, Maxham teaches a first optical coupler/decoupler (i.e. coupler to which reference numeral 16 in Figure 4 is input) configured to separate from a first bidirectional signal a first signal (i.e. "Receive Long-Band" in Figure 4) propagating in a first direction, and configured to combine a second signal (i.e. "Transmit Short-Band" in Figure 4) propagating in a second direction into the first bidirectional signal; a second optical coupler/decoupler (i.e. coupler to which reference numeral 26 in Figure 4 is output) configured to separate from a second bidirectional signal a third signal (i.e. "Receive Short-Band" in Figure 4) propagating in the second direction, and configured to combine a fourth signal (i.e. "Transmit Long-Band" in Figure 4) propagating in the first direction into the second bidirectional signal; a first optical attenuator (i.e. the left-most attenuator in Figure 4) configured to receive the first signal from the first optical coupler/decoupler; a second optical attenuator (i.e. the right-most attenuator in Figure 4) configured to receive the third signal from the second optical coupler/decoupler, a first optical coupler (reference numeral 52 in Figure 4) configured to combine the first and third signals from the first and second optical attenuators, respectively, into

Art Unit: 2613

a combined signal; a first optical amplifier (reference numeral 56 in Figure 4) configured to co-directionally amplify the combined signal; and a first optical decoupler (reference numeral 72 in Figure 4) configured to separate the combined co-directionally amplified signal into the second and fourth signals.

Regarding claim 2, Maxham teaches that the first optical amplifier comprises a multistage amplifier (reference numeral 56 in Figure 4)

Regarding claim 3, Maxham teaches that the first optical amplifier comprises a first stage (reference numeral 23 in Figure 4) and a second stage (reference numeral 27 in Figure 4), wherein the first stage is configured to produce a first intermediate combined co-directionally amplified signal and the second stage (reference numeral 27 in Figure 4) is configured to produce the combined co-directionally amplified signal.

Regarding claim 7, Maxham teaches that the fourth signal and the second signal comprise different wavelengths in two separate bands (i.e. "Transmit Short-Band" "Transmit Long-Band" in Figure 4).

Regarding claim 8, Maxham teaches the fourth signal and the second signal are interleaved on separate channels (i.e. "Transmit Short-Band" "Transmit Long-Band" in Figure 4).

Regarding claim 24, Maxham teaches an optical element connected between the first optical amplifier and the first optical decoupler, wherein the optical element is configured to modify the combined co-directionally amplified signal before the combined co-amplified signal is decoupled by the first optical decoupler (i.e. the signal is split with part of the signal being sent to the backplane modules "BP" in Figure 4).

Regarding claims 30, 50, and 57, Maxham teaches that the first optical attenuator comprises a first variable optical attenuator; the second optical attenuator comprises a second variable optical attenuator; and wherein the first variable optical attenuator and the second variable optical attenuator are configured to be adjusted to equalize a power of the first signal with respect to the third signal (as noted in Figure 4).

Regarding claim 49, Maxham teaches the first signal comprises an unamplified eastbound signal (i.e. the signal has not passed through the amplifier 56 in Figure 4); wherein the second signal comprises an amplified westbound signal (i.e. the signal has passed through the amplifier 56 in Figure 4); wherein the third signal comprises an unamplified westbound signal (i.e. the signal has not passed through the amplifier 56 in Figure 4); and the fourth signal comprises an amplified eastbound signal (i.e. the signal has passed through the amplifier 56 in Figure 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4-6, 32-33, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Kinoshita (U.S. Patent Application Publication No. 2002/0027703).

Regarding claims 4 and 33, Maxham differs from the claimed invention in that Maxham fails to specifically teach that a third optical attenuator connected between the first stage and the second stage. However, Kinoshita teaches that connecting a third optical attenuator between a

Art Unit: 2613

first stage and a second stage of an amplifier is well known in the art (reference “VAT” in Figure 19). One skilled in the art would have been motivated to connect a third optical attenuator between a first stage and a second stage of an amplifier in order to maintain the output of the second stage amplifier at a constant level. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to connect a third variable optical attenuator between a first stage and a second stage of an amplifier.

Regarding claims 5, 32, and 56, Maxham differs from the claimed invention in that Maxham fails to specifically teach dispersion compensator is operatively connected between the first stage and the second stage. However, Kinoshita teaches that this concept is well known in the art (reference DCM in Figure 19). One skilled in the art would have been motivated to include a dispersion compensator is operatively connected between the first stage and the second stage in order to compensate for dispersion occurring in an optical signal of each channel in a wavelength division multiplexed optical signal (paragraph [0108] of Kinoshita).

Regarding claim 6, the combination of Maxham and Kinoshita teach that the first, second and third optical attenuators each comprise a variable optical attenuator (as shown at the input of element 52 in Figure 4 of Maxham; “VAT” in Figure 19 of Kinoshita).

5. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Berg (U.S. Patent No. 6,757,098).

Regarding claims 9 and 11, Maxham differs from the claimed invention in that Maxham fails to specifically teach that a third coupler/decoupler connected to the first coupler/decoupler, wherein the third coupler/decoupler is configured to combine a third bidirectional signal is coupled with the first/second bidirectional signal into produce a fourth bidirectional signal.

Art Unit: 2613

However, Berg teaches that this concept is well known in the art (reference letter i, i' in Figure 11A). One skilled in the art would have been motivated to coupled a third bidirectional signal with the first bidirectional signal in a third optical coupler to produce a fourth bidirectional signal in order to provide a supervisory signal (reference numeral 35 in Figure 11A of Berg).

Regarding claim 10, the combination of references and Berg in particular teaches that the third bidirectional signal includes an optical service channel (reference numeral 35 in Figure 11A).

Regarding claims 12 and 14, the combination of references and Berg in particular teaches that the optical service channel is in a separate wavelength range from the fourth signal and the second signal (Figure 5A).

Regarding claim 13, the combination of references and Berg in particular teaches that the third bi-directional signal includes a control channel (reference numeral 35 in Figure 11A).

Regarding claims 15 and 16, the combination of references inherently teach a terminal connected to the third coupler/decoupler, wherein the terminal is configured to transmit and receive the fourth bidirectional signal.

6. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham.

Regarding claim 25, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is an add/drop multiplexer. However, Maxham suggests as much via a split connection to the backplane. Furthermore, add/drop multiplexers are well known in the art and Official Notice is given to that effect. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include an add/drop multiplexer as an optical element in Maxham.

Art Unit: 2613

Regarding claim 26, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is a dynamic equalizer. However, dynamic gain equalizers are well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to include a dynamic gain equalizer in order to equalize the levels of the optical signals before decoupling. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a dynamic gain equalizer as an optical element in Maxham.

Regarding claim 27, Maxham differs from the claimed invention in that Maxham fails to specifically teach that the optical element is a second amplifier. However, the use of amplifiers is well known in the art and Official Notice is given to that effect. One skilled in the art would have been motivated to include a second amplifier in order to amplify the levels of the optical signals before decoupling. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a second amplifier as an optical element in Maxham.

Claims 28 and 29 recite a combination of elements shown above to obvious additions to the disclosure of Maxham. Therefore, these claims are rejected for the reasons noted above.

7. Claim 34, 52-54, 58, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxham in view of Okuna (U.S. Patent No. 6,480,312).

Regarding claim 34, 52-54, 58, and 61, Maxham differs from the claimed invention in that Maxham fails to specifically teach isolating the co-directionally amplified eastbound signal, isolating the co-directionally amplified westbound signal; compensating for dispersion in the co-directionally amplified eastbound signal, compensating for the dispersion in the co-directionally amplified westbound signal; and recombining the co-directionally amplified eastbound signal

Art Unit: 2613

and the co-directionally amplified westbound signal. However, Okuna teaches that this concept is well known in the art (Figure 1B). One skilled in the art would have been motivated to compensate the co-directionally amplified signals in this manner in order to provide individualized compensation to each signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to isolate the co-directionally amplified eastbound signal, isolate the co-directionally amplified westbound signal; compensate for dispersion in the co-directionally amplified eastbound signal, compensate for the dispersion in the co-directionally amplified westbound signal; and recombine the co-directionally amplified eastbound signal and the co-directionally amplified westbound signal.

Allowable Subject Matter

8. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 11/07/07 have been fully considered but they are not persuasive. Applicant argues that the elements shown in Figure 4 as a boxed "A" with an arrow diagonally dissecting it are not variable attenuators. However, the examiner disagrees. As noted in the descriptive label of the box containing the elements in question, the box is described as "BI-DIRECTIONAL 1-AMPLIFIER FILTER AND **LEVEL CONTROLLER.**" No other element within the box containing the elements in question is capable of controlling the level of input signals. Furthermore, the symbol shown for the elements in question is known to represent a variable attenuator. Therefore, with the box containing the elements in question being labeled

Art Unit: 2613

as a "LEVEL CONTROLLER" and being that a symbol is used that is consistent with a variable attenuator, the examiner concludes that the element in question is indeed a variable optical attenuator.

Finally, as noted in MPEP 2125, when the reference is a utility patent, it does not matter that the feature shown is unintended or unexplained in the specification. The drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art. In re Aslanian, 590 F.2d 911, 200 USPQ 500 (CCPA 1979). In this case, the descriptive label used in Figure 4 as well as the symbol used to represent the element suggest and disclose to the examiner, one of ordinary skill in the art, that the elements in question are variable optical attenuators.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2613

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Agustin Bello
Primary Examiner
Art Unit 2613

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